PATENT
Docket No.: P6C2-US
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of: Eldridge et al. Application No.: Unknown Filing Date: December 27, 2001 For: PROBE CARD ASSEMBLY AND KIT, AND METHODS OF USING SAME	Examiner: Unknown Group Art Unit: Unknown

PRELIMINARY AMENDMENT

Box: New Application
Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Prior to examination of the above-identified patent application (which is filed herewith), please amend the application as follows:

In The Claims

Please cancel claim 1 without prejudice.

Please add new claims 43-85 as follows:

43. (New) A method of producing a tested semiconductor device comprising:

providing a probe card assembly, said probe card assembly including a probe card having a plurality of electrical contacts, a probe substrate having a plurality of elongate, resilient probe elements, and a compliant interconnection structure electrically connecting ones of said electrical contacts with ones of said probe elements;

providing a plurality of semiconductor devices, each of said semiconductor devices including electrical contact pads;

bringing said probe elements into contact with said electrical contact pads of said semiconductor device; and

testing said semiconductor devices.

44. (New) The method of claim 43, wherein said compliant interconnection element is disposed between said probe card and said probe substrate.

45. (New) The method of claim 43, wherein said plurality of semiconductor devices are in wafer form.

46. (New) The method of claim 43, wherein said method of producing a tested semiconductor device further comprises the step of dicing said wafer to singulate said semiconductor devices.

47. (New) The method of claim 44, wherein said compliant interconnection structure comprises a plurality of elongate interconnection elements extending from opposing surfaces of said interconnection structure.

48. (New) The method of claim 47, wherein each of said plurality of elongate interconnection elements is disposed such that said elongate element passes through an opening in said compliant interconnection structure, opposite ends of said elongate interconnection element being spaced from said opposing surfaces of said interconnect structure.

49. (New) The method of claim 47, wherein said plurality of elongate interconnection elements exert forces against said probe card and said probe substrate.

50. (New) The method of claim 49, wherein said forces are spring forces.

51. (New) The method of claim 47, wherein said elongate interconnection elements are resilient.

52. (New) The method of claim 51, wherein each of said elongate interconnect elements comprises a core of a first material and a coating of a second material, wherein said second material is more resilient than said first material.

53. (New) The method of claim 47, wherein each of said elongate interconnect elements comprises a precursor of a first material and a coating of a second material.

54. (New) The method of claim 43, wherein said compliant interconnection structure comprises a first plurality of interconnection elements extending from one surface of said interconnection structure and a second plurality of interconnection structures extending from an opposing surface of said interconnection structure.

55. (New) The method of claim 54, wherein said first plurality of interconnection elements have different mechanical characteristics from said second plurality of interconnection elements.

56. (New) The method of claim 55, wherein said second plurality of interconnection structures are rigid.

57. (New) The method of claim 47, wherein said compliant interconnection structure is demountable.

58. (New) The method of claim 44, wherein said probe card includes a plurality of interconnection element structures, ones of said plurality of interconnection element structures extending from ones of said plurality of electrical contacts, said plurality of interconnection element structures contacting said compliant interconnection structure.

59. (New) The method of claim 44, wherein said probe substrate includes a plurality of interconnection element structures, said plurality of interconnection element structures contacting said compliant interconnection structure.

60. (New) The method of claim 43 further comprising aligning tips of said probe elements by altering an orientation of said probe substrate with respect to said probe card.

61. (New) The method of claim 60 wherein said altering comprises moving a moveable element disposed so as to affect an orientation of said probe substrate with respect to said probe card.

62. (New) The method of claim 61, wherein said moveable element is threaded.

63. (New) The method of claim 61 wherein said moveable element comprises a screw.

64. (New) The method of claim 63, wherein said screw comprises a differential screw.

65. (New) The method of claim 61, wherein moving said moveable element in a first direction causes at least a portion of said probe substrate to move toward said probe card.

66. (New) The method of claim 65, wherein moving said moveable element in a second direction allows at least a portion of said probe substrate to move away from said probe card.

67. (New) The method of claim 60, further comprising moving a plurality of said moveable elements.

68. (New) The method of claim 61 wherein said altering comprises actuating a servo mechanism disposed to alter a position of said probe substrate with respect to said probe card.

69. (New) The method of claim 61, wherein said altering comprises actuating a piezoelectric actuator disposed to alter a position of said probe substrate with respect to said probe card.

70. (New) The method of claim 61, wherein said aligning comprises aligning said tips with an alignment plate.

71. (New) The method of claim 43, wherein said probe substrate comprises a space transformer.

72. (New) The method of claim 43, wherein each of said probe elements comprises a first material and a second material, wherein said second material is more resilient than said first material.

73. (New) A method of producing a tested semiconductor device comprising:

providing a probe card comprising a plurality of electrical contacts;

providing a probe substrate moveably affixed to said probe card and comprising a plurality of elongate, resilient probe elements, ones of said elongate resilient probe elements being in electrical communication with ones of said electrical contacts;

aligning tips of said probe elements by altering an orientation of said probe substrate with respect to said probe card;

providing a semiconductor device;

bringing said tips into contact with said semiconductor device; and

testing said semiconductor device.

74. (New) The method of claim 73, wherein said altering comprises moving a moveable element disposed so as to affect an orientation of said probe substrate with respect to said probe card.

75. (New) The method of claim 74, wherein said moveable element is threaded.

76. (New) The method of claim 74, wherein said moveable element comprises a screw.

77. (New) The method of claim 70, wherein said screw comprises a differential screw.

78. (New) The method of claim 74, wherein moving said moveable element in a first direction causes at least a portion of said probe substrate to move toward said probe card.

79. (New) The method of claim 78, wherein moving said moveable element in a second direction allows at least a portion of said probe substrate to move away from said probe card.

80. (New) The method of claim 73, further comprising moving a plurality of said moveable elements.

81. (New) The method of claim 73, wherein said altering comprises actuating a servo mechanism disposed to alter a position of said probe substrate with respect to said probe card.

82. (New) The method of claim 73, wherein said altering comprises actuating a piezoelectric actuator disposed to alter a position of said probe substrate with respect to said probe card.

83. (New) The method of claim 73, wherein said probe substrate comprises a space transformer.

84. (New) The method of claim 73, wherein said probe elements comprise a core of a first material and a coating of a second material, wherein said second material is more resilient than said first material.

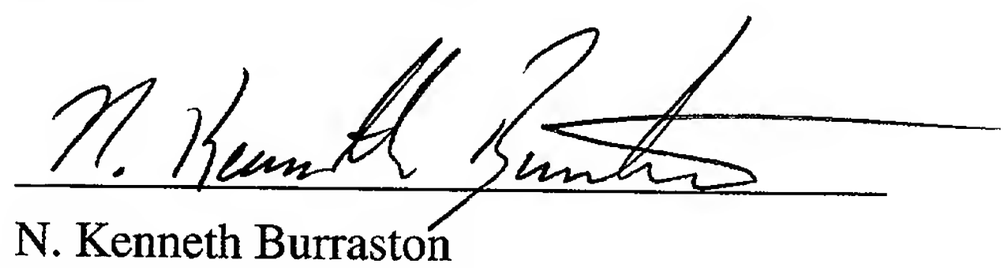
85. (New) The method of claim 73, wherein said aligning comprises aligning said tips with an alignment plate.

REMARKS

By this Preliminary Amendment, Applicants cancel claim 1 and add new claims 43-85. Applicants previously canceled claims 2-42. Consequently, claims 43-85 are now pending in the application. No new matter has been added, and the new claims are fully supported by the original disclosure. Applicants respectfully assert that the new claims are in condition for allowance and ask for an early notice of allowability.

Respectfully submitted,

Date: December 27, 2001

By: 

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